PATENT COOPERATION TREATY

From the
INTERNATIONAL SEARCHING AUTHORITY

To:
SEMICONDUCTOR ENERGY
LABORATORY CO., LTD.

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PCT

2005. 3. 18

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

(PCT Rule 43*bis*.1)

Date of mailing *(day/month/year)*	15. 3. 2005
Applicant's or agent's file reference 00000PCT7574	FOR FURTHER ACTION See paragraph 2 below

International application No.	International filing date *(day/month/year)*	Priority date *(day/month/year)*
PCT/JP2004/018978	14.12.2004	15.12.2003

International Patent Classification (IPC) or both national classification and IPC
Int.Cl[7] H01L 27/12, H01L 29/786, H01L 21/336, G06K 19/00

Applicant
SEMICONDUCTOR ENERGY LABORATORY CO., LTD.

1. This opinion contains indications relating to the following items:

- [x] Box No. I Basis of the opinion
- [ ] Box No. II Priority
- [ ] Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- [ ] Box No. IV Lack of unity of invention
- [x] Box No. V Reasoned statement under Rule 43*bis*.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- [ ] Box No. VI Certain documents cited
- [ ] Box No. VII Certain defects in the international application
- [ ] Box No. VIII Certain observations on the international application

2. FURTHER ACTION

If a demand for international preliminary examination is made, this opinion will be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA") except that this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of 3 months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

3. For further details, see notes to Form PCT/ISA/220.

Date of completion of this opinion 24.02.2005	
Name and mailing address of the ISA/JP **Japan Patent Office** 3-4-3, Kasumigaseki, Chiyoda-ku, Tokyo 100-8915, Japan	Authorized officer Sonoko Miyazaki Telephone No. +81-3-3581-1101 Ext. 3462

4M 3123

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Box No. I **Basis of the opinion**

1. With regard to the **language**, this opinion has been established on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.

   ☐ This opinion has been established on the basis of a translation from the original language into the following language _____ , which is the language of a translation furnished for the purposes of international search (under Rules 12.3 and 23.1(b)).

2. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:

   a. type of material

   ☐ a sequence listing
   ☐ table(s) related to the sequence listing

   b. format of material

   ☐ in written format
   ☐ in computer readable form

   c. time of filing/furnishing

   ☐ contained in the international application as filed.
   ☐ filed together with the international application in computer readable form.
   ☐ furnished subsequently to this Authority for the purposes of search.

3. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.

4. Additional comments:

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Box No. V **Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

1. Statement

Novelty (N)	Claims	1-30	YES
	Claims		NO
Inventive step (IS)	Claims		YES
	Claims	1-30	NO
Industrial applicability (IA)	Claims	1-30	YES
	Claims		NO

2. Citations and explanations

D1:US 2001/0015256 A1(Semiconductor Energy Laboratory)
2001.08.23,whole document, Figs.1-9
D2:JP 2003-203898 A(SEIKO EPSON CORPORATION)
2003.07.18,whole document, Figs.1-20
D3:US 2001/0053559 A1(Semiconductor Energy Laboratory)
2001.12.20,whole document, Figs.1-14
D4:WO 2003/010825 A1(SEIKO EPSON CORPORATION)
2003.02.06,whole document, Figs.1-34

[Claims 1-4]
The subject matter of claims 1-4 does not appear to involve an inventive step in view of the cited documents D1- D2.
D1 discloses a method for manufacturing a thin film integrated circuit device comprising the steps of: forming a peel-off layer over a substrate; forming a base film over the peel-off layer; forming a plurality of thin film integrated circuit over the base film; forming a polyimide film over the plurality of thin film integrated circuit, thereby forming the plurality of thin film integrated circuit devices; forming a groove at a boundary between the plurality of thin film integrated circuit devices; attaching a jig to an upper portion of the plurality of thin film integrated circuit devices; introducing a gas containing halogen fluoride into the groove, thereby removing the peel-off layer and separating the plurality of thin film integrated circuit devices; and removing the jig attaching to the plurality of thin film integrated circuit devices.
D2 discloses a method for manufacturing a thin film integrated circuit device comprising the steps of: forming a peel-off layer over a substrate; forming a base film over the peel-off layer; forming a plurality of thin film integrated circuit over the base film; forming a groove at a boundary between the plurality of thin film integrated circuit devices; attaching a jig to an upper portion of the plurality of thin film integrated circuit devices; introducing liquid etchant into the groove, thereby removing the peel-off layer and separating the plurality of thin film integrated circuit devices; and removing the jig attaching to the plurality of thin film integrated circuit devices.

Supplemental Box

In case the space in any of the preceding boxes is not sufficient.
Continuation of: Box No.V

[Claim 5]
The subject matter of claim 5 does not appear to involve an inventive step in view of the cited documents D1- D2.
D2 discloses that the jig is attached using an adhesive material whose adhesive force is reduced or lost by UV light irradiation.

[Claim 6]
The subject matter of claim 6 does not appear to involve an inventive step in view of the cited documents D1- D3.
D3 discloses forming a siloxane film over the plurality of thin film integrated circuit devices.

[Claims 7-8]
The subject matter of claims 7-8 does not appear to involve an inventive step in view of the cited documents D1- D2.
D1 discloses that the peel-off layer contains silicon as a main component and the base film is a silicon oxide film.

[Claim 9]
The subject matter of claim 9 does not appear to involve an inventive step in view of the cited documents D1- D2.
D2 discloses that the groove is formed by dicing or dry etching.

[Claims 10-11]
The subject matter of claims 10-11 does not appear to involve an inventive step in view of the cited documents D1- D2.
D1 discloses that the substrate is a glass substrate and the halogen fluoride is chlorine trifluoride.

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Supplemental Box

In case the space in any of the preceding boxes is not sufficient.
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[Claims 12-15]
The subject matter of claims 12-15 does not appear to involve an inventive step in view of the cited documents D1- D2, D4.
D1 discloses a method for manufacturing a thin film integrated circuit device comprising the steps of: forming a peel-off layer over a substrate; forming a base film over the peel-off layer; forming a plurality of thin film integrated circuit over the base film; forming a polyimide film over the plurality of thin film integrated circuit, thereby forming the plurality of thin film integrated circuit devices; forming a groove at a boundary between the plurality of thin film integrated circuit devices; attaching a jig to an upper portion of the plurality of thin film integrated circuit devices; introducing a gas containing halogen fluoride into the groove, thereby removing the peel-off layer and separating the plurality of thin film integrated circuit devices; and removing the jig attaching to the plurality of thin film integrated circuit devices.
D2 discloses a method for manufacturing a thin film integrated circuit device comprising the steps of: forming a peel-off layer over a substrate; forming a base film over the peel-off layer; forming a plurality of thin film integrated circuit over the base film; forming a groove at a boundary between the plurality of thin film integrated circuit devices; attaching a jig to an upper portion of the plurality of thin film integrated circuit devices; introducing liquid etchant into the groove, thereby removing the peel-off layer and separating the plurality of thin film integrated circuit devices; and removing the jig attaching to the plurality of thin film integrated circuit devices.
D4 discloses an antenna on an upper portion of the plurality of thin film integrated circuit devices.

[Claim 16]
The subject matter of claim 16 does not appear to involve an inventive step in view of the cited documents D1- D2, D4.
D2 discloses that the jig is attached using an adhesive material whose adhesive force is reduced or lost by UV light irradiation.

[Claim 17]
The subject matter of claim 17 does not appear to involve an inventive step in view of the cited documents D1- D4.
D3 discloses forming a siloxane film over the plurality of thin film integrated circuit devices.

[Claims 18-19]
The subject matter of claims 18-19 does not appear to involve an inventive step in view of the cited documents D1- D2, D4.
D1 discloses that the peel-off layer contains silicon as a main component and the base film is a silicon oxide film.

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Supplemental Box

In case the space in any of the preceding boxes is not sufficient.
Continuation of: Box No.V

[Claim 20]
The subject matter of claim 20 does not appear to involve an inventive step in view of the cited documents D1- D2, D4.
D2 discloses that the groove is formed by dicing or dry etching.

[Claims 21-22]
The subject matter of claims 21-22 does not appear to involve an inventive step in view of the cited documents D1- D2, D4.
D1 discloses that the substrate is a glass substrate and the halogen fluoride is chlorine trifluoride.

[Claims 23-24, 27-28]
The subject matter of claims 23-24, 27-28 does not appear to involve an inventive step in view of the cited documents D1-D4.
D4 discloses a non-contact thin film integrated circuit devices comprising: a thin film integrated circuit formed over a substrate with a base film and an antenna formed over the plurality of thin film integrated circuit devices.
D3 discloses a siloxane film over the plurality of thin film integrated circuit devices.

[Claims 26, 29]
The subject matter of claims 26, 29 does not appear to involve an inventive step in view of the cited documents D1-D4.
D4 discloses that the substrate is a flexible substrate, a bill or a credit card.

[Claims 25, 30]
The subject matter of claims 25, 30 does not appear to involve an inventive step in view of the cited documents D1-D4.
It is common knowledge technology to make an antenna of Cu, Fe, Al, etc..